

**Big Island Biologically Important Areas Background Information**  
KAU

Location	Target ecosystem	Natural Communities	Designation/Ownership
Southwest slope of Mauna Loa	Montane wet, Lowland wet, wet cliff	Closed and open ohia forest, Closed and open koa/ohia forest	Kau Forest Reserve

**Biological importance:** Very important forest bird area, best reintroduction site for Alala, opeapea and seabird. Picture wing fly critical habitat. High quality forest, Kau Lowland and Mesic wet ecosystems not represented in NARS.

**Threats:** Pigs, cattle in eastern sections, mouflon sheep, small predators. Strawberry guava, Christmasberry, Silk oak, Eucalyptus, *Erharta*, kahili ginger, other shrubs, fire and other avian and plant diseases. Acid rain.

**Issues for conservation management:** Vegetation transects show very high ground disturbance by pigs, even in very native areas.

- Forestry undergoing management planning process, feral cattle control and an experimental koa forest restoration project. Management plan could help make justification for more resources.
- TMA has a Judas feral cattle project and weed mapping and control.
- Waihaka was proposed as a NAR for geological and biological reasons; proposal had an associated botanical survey of the area.
- Montane and lowland wet forests were represented in other Big Island NARS, and the difference between these are not significant.
- If area becomes a NAR, there will be a political uproar. A Forest Bird Sanctuary may be another designation option. Next steps could be to define management units.
- Important to develop specific fence proposals.
- High public use: hunting, maile collection.

**POHAKULOLOA GULCH**

Location	Target ecosystem/geology	Natural Communities	Designation
South of NAR, 6,000-13,000 ft	Alpine and subalpine. Glacial melt, erosion, moraine deposits. Subglacial eruptions with loess and floods. Springs	Mamane/naio forest, alpine shrublands, alpine grasslands, alpine aeolian desert	Mauna Kea and Mauna Loa Forest Reserve

**Biological importance:** Akoko (*C. olowaluana*), naenae (*D. arborea*), *stenogyne microphylla*. Palila Habitat. Previous records of Nene, Hawaii Creeper, Akiapolaau, Opeapea (Hawaiian Hoary Bat). Alpine invertebrates. No mamane-naio forest in NARS.

**Priority Threats:** Fire, feral animals such as mouflon and pigs, grasses.

**Issues for conservation management:** Palila fence being planned.

- Pohakuloa TA and State Parks could assist with management.
- Higher quality mamane-naio forest exists elsewhere –could find a better representation.
- A NAR proposal should be smaller and easily definable with straight lines.

- This is a popular hunting area, but difficult to access. Bird hunters and motorcyclists use flat portion near saddle road. Sheep removal is taking place in the area.
- The area is culturally important with archeological features.
- There may be ordinance issues or trash.
- A Comprehensive Management Plan for Mauna Kea is being developed. Perhaps should wait until fencing and planning plays out, as this is a bad time to propose a NAR. Maps should be re-drawn and other options with similar geology or forest should be examined.

#### WAIEA

Location	Target ecosystem	Natural Communities	Designation
South of Kona unit of Hakalau Refuge. 1,600ft-6,000ft	Mon. wet/mesic Lwln d wet.	Closed/Open ohia forest. Closed/open koa forest	State with revocable permit to McCandless Ranch since 1975

**Biological importance:** Dry ohia forest with sandalwood and mamane, Koa belt. Important bird area (4 endangered sp.), former Alala habitat. Opeapea and Picture-wing fly habitat. Rare plants.

**Priority Threats:** Strawberry guava, Christmasberry, Banana poka, *Clidemia*, Florida blackberry, German ivy, pasture grasses.  
Cattle, pigs, sheep common above 5,000 ft, donkeys, goats, mouflon. Small mammals.

**Issues for conservation management:** Existing cattle fence on southern boundary.  
-FEA completed to build fence over Refuge (5,300 acres), including replacing south fence. Currently bulldozing fence corridor. Upper third portion mouflon-proof.  
-No State access to McCandless Ranch. No public access. Refuge has had access issues.  
-Likely to be grazed and beat up, yet some pit craters may have some intact vegetation.  
-Would a set aside to DOFAW impact relationship with McCandless? Could work together to remove cattle if a set aside happened.  
-It could be a bird sanctuary, as it is adjacent to the Refuge.  
-May have to straighten road as it cuts in and out of State/McCandless land.  
-Need to have a site visit, as well as examine lease document and meet with McCandless.

#### LAUPAHOEHOENUI MAUKA

Location	Target ecosystem	Natural Communities	Designation/Ownership
Northwest of Puu O Umi NAR	Lwln d wet/mesic/dry	Open and closed ohia, wet cliff	Laupahoehoe Nui LLC, Kohala Forest Reserve

**Biological importance:** Rare plants and snails. Lowland wet forest, lama forest.

**Priority Threats:** Prevalence of feral pigs  
-Rats, feral cats, dogs, and mice and non-native forest birds.  
-Predatory flatworms and omnivorous snails eat native snails.  
-Weeds: broomsedge, kahili ginger, yellow ginger, *Melastoma candidum*, banana poka, fountain grass, blackberry, palm grass, fireweed, *Tibouchina herbacea*, *Clidemia*, *T. urvelliana*, Strawberry guava.

**Issues for conservation management:** Management actions in the FEA of the Kohala Watershed Partnership had conservation as the highest priority and planned associated management actions. Having KWP implement plan would afford area conservation protection. Obstacles for NAPP as conservation easements can be expensive to create.

WAIMANU

Location	Target ecosystem	Natural Communities	Designation/Ownership
Valley mouth and lowlands	Wetlands, stream	Same	Unencumbered state, private, DHHL

**Biological importance:** Very high aquatic species richness, “Supporting” Wetland.

**Threats:** Pigs, weeds. Low habitat quality. Small mammal predators.  
 -Invasive aquatic species.

**Issues for conservation management:** Area was proposed as an Estuarine Reserve, but now is unencumbered. Most of the wetlands are DHHL.  
 -Should make area a forest reserve for public hunting. It is adjacent to Muliwai (FR).  
 -Na Ala Hele agreement with KS/BE for campgrounds and composting toilets.

MAUNA LOA MOSAIC

Location	Target ecosystem	Natural Communities	Designation
South of Saddle road 3,400-7,600 ft	Montane Wet, Mesic and Dry, Subalpine, and Pioneer habitats	-Koa/Ohia montane wet forest -Ohia/Hapuu montane wet forest -Ohia/Mixed Shrub montane wet forest -Ohia montane wet shrubland -Koa/Ohia Mixed Montane Mesic Forest - <i>Deschampsia nubigena</i> Subalpine Mesic Grassland -Mixed Sedge and Grass Montane Bog	Mauna Loa Forest Reserve, Upper Waiakea Forest Reserve

**Biological importance:** Lava flows and kipuka high quality native vegetation.  
 -Many different successional stages of ohia forest and shrubland on flows.  
 -Different ecosystems on kipuka due to elevation gradient.  
 -Natural laboratory of evolution and succession. Important geological features.  
 -Habitat for all native forest birds (Incl. Io & Nene) except Palila, above malaria line.  
 -Habitat for *Drosophila* sp. Many rare plants, especially in bogs.  
 -Lava tubes with specialized rare plants.

**Threats:** Weeds: *Anthoxantum odoratum* invading grasslands. Himalayan raspberry, Gorse, Strawberry Guava, Kahili ginger, *Tibouchina*.  
 -Pig activity in bogs, and on sparsely vegetated recent lava flows, severe below 7,000 ft.  
 -Mouflon sheep are abundant in higher elevation in shrubland, grassland, open lava.  
 -Rats, Mice, Mongoose. Alien forest birds.

**Issues for conservation management:** A NAR proposal in the 80s for this area triggered an uprising from hunters, and probably would again. It is a popular hunting area, esp. for specialized rifle- and archery-only sections.

- Should fence bogs and identify the highest value kipukas.
- Perhaps define a much smaller area to propose as a NAR.

#### HAMAKUA

Location	Target ecosystem	Natural Communities	Ownership
Makai of Hakalau Refuge	Montane and Lowland wet	-Open and closed Koa-Ohia with native shrubs, tree ferns, matted ferns -Open ohia scrub, matted ferns	Hawaii Forest Preservation, LLC

**Biological importance:** Rare snails and *Drosophila*. Habitat for many forest birds. Bogs in upper areas. Streams have high aquatic species richness.

**Threats:** Pigs. Strawberry guava present under 2,800ft. Palmgrass, *Tibouchina*.

**Issues for conservation management:** Area proposed for Forest Legacy, and landowners may want to sell since they cannot get a CDUP to log koa. Should acquire.  
-Hunters do not have access to the area. More access for management is desirable.

#### KAMILO

Location	Target ecosystem	Natural Communities	Ownership
Coast north of Kaalualu bay	Coastal	Coastal, anchialine pools.	State unencumbered

**Biological importance:** Anchialine pools, coastal & lowland ecosystem connectivity.

**Threats:** Human disturbance, fire, goats. Weeds: kiawe, christmasberry, fountain grass.

**Issues for conservation management:** Forest reserve designation in progress, allowing allow goat hunting. There is a fountaingrass removal effort. HWF has beach clean-ups.  
-Could have bird hunting mauka, and could have an ala kahakai trail along the coast.

#### PUNA LOWLAND WET FORESTS

Location	Target ecosystem	Natural Communities	Ownership
Lowland/coastal areas near red road	Coastal, Lowland wet	Closed and open ohia-lama forest, Open ohia-uluhe scrub, Closed ohia lama-hala forest Open hala-kukui forest	State unencumbered/Forest reserves, private

**Biological importance:** Different lowland wet ecosystem than in other Big Island NARS, recent lava flows demonstrating succession, a few rare plants. Caves.

**Threats:** Pigs on older substrates. Strawberry guava, *Melochia umbellate*, Ironwood, Christmas berry, Guarumo, Albizia, Octopus tree, *Clidemia*, *Meslastoma candidum*. *Miconia calvescens* incipient. Bird mites. Geothermal/development/farming.

**Issues for conservation management:** Ironwood and Albizia control projects in FRs.  
-Papaya farms have bulldozed forests, biofuels are a threat. Should make a forest reserve.  
-Archeological and historic sites.  
-A lowland wet forest working group and aerial mapping can help planning for area.